

Appl No. 10/727,485
Amendment dated June 17, 2010
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Claims 1 - 26 (canceled)

Claim 27 (currently amended) A method for producing solid lubricant agglomerates comprising:

admixing a particulate solid lubricant, an inorganic water dispersible binder, and water to produce a mixture having about 5 to 60 weight % solids based on the total weight of the mixture, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the inorganic water dispersible binder being admixed is from about 19:1 to about 1:19 and wherein the inorganic water dispersible binder is a hydrous aluminum silicate that is stabilized at a temperature above about 850°C;

particulating the mixture and drying the particulated mixture to produce dry agglomerates at a temperature below a the stabilizing temperature at which the inorganic water dispersible binder is rendered non-dispersible in the water;

classifying the dry agglomerates by size, or milling and classifying the dry agglomerates by size, into an undersize particle fraction; a desired particle size fraction and an oversize particle fraction;

recycling and admixing the undersize particle fraction with the particulate solid lubricant, the inorganic water dispersible binder and the water in the mixture, recycling and admixing the oversize particle fraction with the particulate solid lubricant, the inorganic water dispersible binder and the water in the mixture, for redispersion of the undersize and the oversize particle fractions in the water to form the mixture,

and heating the desired particle size fraction to a the temperature effective to render

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the inorganic water dispersible binder in the dry agglomerate of the desired particle size fraction non-dispersible in the water.

Claim 28 (canceled) The method as claimed in claim 27, wherein the inorganic water dispersible binder is a hydrous aluminum silicate that is stabilized at a temperature above about 850°C.

Claim 29 (previously presented) The method as claimed in claim 27, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the binder being admixed is from about 9 : 1 to about 4 : 6.

Claim 30 (previously presented) The method as claimed in claim 27, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the binder being admixed is about 8 : 2.

Claim 31 (previously presented) The method as claimed in claim 27, wherein the solid lubricant is at least one lubricant selected from the group consisting of hexagonal boron nitride, graphite, calcium fluoride, magnesium fluoride and barium fluoride particles.

Claim 32 (previously presented) The method as claimed in claim 28, wherein the solid lubricant is hexagonal boron nitride.

Claim 33 (previously presented) The method as claimed in claim 32, wherein the ratio of the weight of hexagonal boron nitride being admixed to the weight of the binder being admixed is from about 9 : 1 to about 4 : 6.

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Claim 34 (previously presented) The method as claimed in claim 32, wherein the ratio of the weight of hexagonal boron nitride being admixed to the weight of the binder being admixed is about 8 : 2.

Claim 35 (previously presented) The method as claimed in claim 32, wherein hydrous aluminium silicate is at least one of bentonite, fuller's earth or montmorillonite.

Claim 36 (previously presented) The method as claimed in claim 35, wherein the mixture comprises 20 to 30 weight% solids based on the total weight of the mixture.

Claim 37 (previously presented) The method as claimed in claim 27, wherein the liquid is water, the solid lubricant is hexagonal boron-nitride and the binder is bentonite to be stabilized at temperatures above about 850°C.

Claim 38 (previously presented) The method as claimed in claim 37, further comprising admixing a filler with the solid lubricant, the binder, and the water to produce the mixture, wherein the solids of the mixture has up to 40 volume % filler based on the total volume of the solids.

Claim 39 (previously presented) The method as claimed in claim 37, wherein the mixture comprises 20 to 30 weight% solids based on the total weight of the mixture.

Claims 40 – 43 (canceled)

Claim 44 (previously presented) A method for producing solid lubricant agglomerates comprising:

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admixing a particulate solid lubricant selected from the group consisting of hexagonal boron nitride, graphite, calcium fluoride, magnesium fluoride, barium fluoride, tungsten disulphide and molybdenum disulphide particles, at least one inorganic water dispersible binder selected from the group consisting of bentonite, fuller's earth and montmorillonite, and water to produce a mixture having about 5 to 60 weight % solids based on the total weight of the mixture, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the binder being admixed is from about 19:1 to about 1:19;

particulating the mixture and drying the mixture to produce dry agglomerates at a temperature below a stabilizing temperature at which the inorganic water dispersible binder is rendered non-dispersible in the water;

classifying the dry agglomerates by size, or milling and classifying the dry agglomerates by size, into an undersize particle fraction, a desired particle size fraction and an oversize particle fraction;

recycling and admixing the undersize particle fraction with the particulate solid lubricant, the inorganic water dispersible binder and the liquid in the mixture, recycling and admixing the oversize particle fraction with the particulate solid lubricant, the inorganic water dispersible binder and the water in the mixture, for redispersion of the undersize and the oversize particle fractions in the water to form the mixture,

and heating the desired particle size fraction to a temperature effective to render the inorganic water dispersible binder in the dry agglomerate of the desired particle size fraction non-dispersible in the water.

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Claim 45 (previously presented) The method as claimed in claim 44, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the binder being admixed is from about 9 : 1 to about 4 : 6.

Claim 46 (previously presented) The method as claimed in claim 44, wherein the ratio of the weight of the solid lubricant being admixed to the weight of the binder being admixed is about 8 : 2.

Claim 47 (canceled) The method as claimed in claim 44, wherein the solid lubricant is at least one lubricant selected from the group consisting of hexagonal boron nitride, graphite, calcium fluoride, magnesium fluoride, barium fluoride, tungsten disulphide and molybdenum disulphide particles.

Claim 48 (previously presented) The method as claimed in claim 44, wherein the solid lubricant is hexagonal boron nitride.

Claim 49 (previously presented) The method as claimed in claim 48, wherein the inorganic binder is bentonite and the ratio of the weight of hexagonal boron nitride being admixed to the weight of the bentonite being admixed is from about 9 : 1 to about 4 : 6.

Claim 50 (previously presented) The method as claimed in claim 49, wherein the ratio of the weight of hexagonal boron nitride being admixed to the weight of the bentonite being admixed is about 8 : 2.

Claim 51 (previously presented) The method as claimed in claim 49, wherein the bentonite is stabilized at temperatures above about 850°C.

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Claim 52 (previously presented) The method as claimed in claim 49, wherein the mixture comprises 20 to 30 weight% solids based on the total weight of the mixture.

Claim 53 (canceled)

Claim 54 (previously presented) The method as claimed in claim 44, wherein the mixture comprises 20 to 30 weight% solids based on the total weight of the mixture.

Claim 55 (previously presented) The method as claimed in claim 44, wherein the mixture further comprises a filler, wherein the solids of the mixture has up to 40 volume % filler based on the total volume of the solids.

Claims 56 - 71 (canceled)

Claim 72 (previously presented) A solid lubricant agglomerate produced by the method of any one of claims 32, 35, 37, 39, 44 - 52, 54 or 55.

Claim 73 (previously presented) A rounded shape form of the solid lubricant agglomerate of claim 72.

Claims 74 - 92 (canceled)